years prior to when shipments could begin, DOE has not selected routes for transporting spent nuclear fuel and high-level radioactive waste to a Yucca Mountain Repository. The routes used in the analysis were selected in accordance with U.S. Department of Transportation's highway routing regulations in 49 CFR 397.101. These regulations require the use of the Interstate Highway System for transporting spent nuclear fuel and high-level radioactive waste and selection of routes that would reduce time in transit. A key element of the regulations is that reducing time in transit would reduce radiological risk, and thus the emphasis on use of Interstate System highways. In rural areas, traffic generally flows freely at highway speeds and there are fewer delays and less traffic than suburban and urban areas. In addition, there are fewer people in the vicinity of the shipments in rural areas than suburban and urban areas, which would lead to lower radiological impacts. The radiological exposures to maximally exposed individuals, as shown in Sections 6.2.3 and 6.2.4 for the national mostly legal-weight truck scenario, would be well below the exposures for which any health effects would be expected. These impacts are stated as being a total of 6 millirem over 24 years (3-in-1-million chance of a lifetime latent cancer fatality) for legal-weight truck transport and 0.75 rem (about 4-in-10,000 chance of a lifetime latent cancer fatality) for a maximum reasonably foreseeable accident involving a legal-weight truck cask. Regardless of whether a person was a tourist, nonresident, or resident or whether a person lived in a rural, suburban, or urban area, the maximum incident-free and accident radiological exposures calculated in the EIS would lead to small impacts.

8.8.3 (11861)
Comment - EIS000764 / 0003
Since the Private Fuel Storage [PFS] project will transport its customers spent nuclear fuel to the storage facility by rail, the conclusions reached by DOE in the DEIS concerning transportation are relevant to the PFS project. For the last fifteen or so years, I have been actively supporting the ability of the nuclear industry to safely transport spent nuclear fuel. And the conclusions of the DEIS serve to re-enforce the fact that spent nuclear fuel has and can be transported safely and efficiently.

There has been ample historical evidence that safe, routine transportation of spent nuclear fuel can be accomplished. For more than three decades, the domestic nuclear industry has conducted almost three thousand shipments of spent nuclear fuel without a release of radioactive material or a failure of the transport cask. This is a remarkable safety record. I believe this is not the result of chance, but the result of a comprehensive federal regulatory regime of cask design criteria and certification regulation, and transportation regulation, and the conscious effort of the nuclear industry.

As I mentioned before, the conclusions of the DEIS with regard to transportation have relevance to the PFS project which is currently in the licensing process with the Nuclear Regulatory Commission. While the transportation of spent nuclear fuel to the PFS project from our customers is the subject of a separate NRC [Nuclear Regulatory Commission] licensing process, any future shipments to the repository from the PFS facility would be bounded by the evaluations of this DEIS.

Response
DOE agrees with the commenter's remarks about the safety record of shipments of spent nuclear fuel. Section 6.2 of the EIS provides a discussion of transportation impacts related to the potential use of the Private Fuel Storage Facility. Section J.4 provides a map of Utah showing the location of the Private Fuel Storage Facility in relation to transportation routes used in the analysis. Section 8.4 reports the cumulative impacts of the Private Fuel Storage project.

8.9 Transportation Costs

8.9 (193)
Comment - 13 comments summarized
Commenters stated that the EIS does not adequately analyze the impacts to rail lines and highways from the transport of spent nuclear fuel and high-level radioactive waste to Yucca Mountain, nor does it describe the agencies that would pay for transportation-related improvements, mitigation, and monitoring. Commenters said that these are important issues because transport would last several decades. Some said that it is DOE's responsibility to make sure that all needed upgrades of infrastructure are done.

With regard to rail shipments, commenters questioned the adequacy of rail maintenance and believed that a high likelihood exists for mechanical breakdowns and errors because of the ever-increasing numbers of trains and their adverse effects on rail ties, switches, and roadbed. Safety practices were questioned, especially considering that the trains carrying spent nuclear fuel and high-level radioactive waste would pass within 6 meters (20 feet) of other trains traveling in opposite directions at high speeds.

With regard to highway shipments, commenters said that most states are having financial difficulty keeping up with road repairs and maintenance, and that Federal monies are not available for maintenance. Others questioned how DOE can adequately assess the impacts of truck transportation on state and local highways without understanding site-specific conditions. Some said that the EIS did not examine the impacts of long, slow-moving spent nuclear fuel and high-level radioactive waste trucks on roads, bridges and culverts; highway safety and traffic disruption; and impacts to levels of service.

With regard to Nevada, commenters said that the EIS should describe road upgrades and maintenance, as well as who would pay for these upgrades and maintenance. Some said that there are no roads in Nevada that are able to withstand the weight of a single 110-metric-ton (120-ton) truck, much less 300 trucks. Because of extreme heat in southern Nevada during the summer and extreme cold in northern Nevada during the winter, some commenters said that the EIS should evaluate the potential that asphalt roads would have to be replaced by concrete roads and that the EIS should include an estimate of the costs to do so. Commenters noted that the statement on page 6-9 of *Nevada Potential Repository Transportation Strategy, Study 2*, Volume 1 (DIRS 101214-CRWMS M&O 1996), that the "estimated pavement wear would increase by 10 percent" is not substantiated by any detailed analysis, even though the EIS recognizes that pavement wear is a major cost of the heavy-haul truck option. Others wanted to know the locations of truck-turnout lanes and whether these lanes would be sufficient over the life of the repository. These commenters said that it was inappropriate for DOE to expect that upgrades that are sufficient to meet today's traffic would be adequate over the life of the repository.

Response

Projected annual shipments of spent nuclear fuel and high-level radioactive waste to Yucca Mountain by truck, rail, and barge would be a very small fraction (less than 0.01 percent) of domestic highway, railroad, and barge traffic (see Section 6.2 of the EIS). For the most-used highways and railroads, which would be those in Nevada, shipments to Yucca Mountain would be less than 1 percent of Nevada truck shipments and 0.1 percent of Nevada railcar shipments.

DOE does not believe it necessary to consider population characteristics on a community-by-community basis to determine potential public health and safety impacts from the transportation of spent nuclear fuel and high-level radioactive waste. The use of widely accepted analytical tools, latest reasonably available information, and cautious but reasonable assumptions if there are uncertainties, offer the most appropriate means to arrive at conservative estimates of transportation-related impacts.

In this EIS, DOE has used computer models it has used in previous EISs and other studies. These models are widely accepted by the national and international scientific and regulatory communities. In addition to ensuring that the EIS analyses reflect the latest reasonably available information, DOE has either incorporated information that has become available since the publication of the Draft EIS or modified existing information to accommodate conditions likely to be encountered over the life of the Proposed Action. For example, the analysis in the Draft EIS relies on population information from the 1990 Census. In this Final EIS, DOE has scaled impacts upward to reflect the relative state-by-state population growth to 2035, using 2000 Census data.

Although the EIS analyses are based on the latest reasonably available information and state-of-the-art analytical tools, not all aspects of incident-free transportation or accident conditions can be known with absolute certainty. In such instances, DOE has relied on conservative assumptions that tend to overestimate impacts. For instance, DOE assumed that the radiation dose external to each vehicle carrying a cask during routine transportation would be the maximum allowed by U.S. Department of Transportation regulations. Similarly, DOE assumed that an individual, the "maximally exposed individual," would be a resident living 30 meters (100 feet) from a point where all truck shipments would pass. Under these circumstances, the maximally exposed individual would receive a dose of about 6 millirem from exposure to all truck shipments (6 millirem represents an increased probability of contracting a fatal cancer of 3 in 1 million). Although it can be argued that individuals could live closer to these shipments, it is highly

unlikely that an individual would be exposed to all shipments over the 24-year period of shipments to the repository, even though DOE incorporated this highly conservative assumption in the analysis.

However, in response to comments, DOE has considered locations at which individuals could reside nearer the candidate rail corridors and heavy-haul truck routes in Nevada as a way of representing conditions that could exist anywhere in potentially affected communities. For example, DOE assumed that a maximally exposed individual could reside as close as 4.9 meters (16 feet) to a candidate heavy-haul truck route. During the 24-year period of repository operations this maximally exposed individual, would receive an estimated dose of about 29 millirem, resulting in an increased fatal cancer probability of 2 in 100,000.

These exposures would be well below those received from natural background radiation, would not be discernible even if corresponding doses could be measured, and would not add measurably to other impacts that an individual could incur. For comparison, the lifetime likelihood of an individual incurring a fatal cancer from all other causes is about 1 in 4.

With the exception of the heavy-haul truck scenario, the shipments would use vehicles (trucks, railcars, and barges) similar in weight, size, and operation to vehicles that transport other commodities. As a result, potential impacts on transportation infrastructure (infrastructure typically includes bridges, roadways, railroad track, switchyards, locks, navigation aids, etc.) of a vehicle used in transporting spent nuclear fuel and high-level radioactive waste across the United States would be similar to the impacts of other commercial vehicles that use the nation's transportation systems. Because there would be few vehicles transporting spent nuclear fuel and high-level radioactive waste in comparison to other vehicles using the transportation system, the impacts on transportation infrastructure of shipments to Yucca Mountain would not be discernible. In addition, because the annual number of shipments that would be made to Yucca Mountain is less than 0.001 percent of the more than 300 million annual shipments of hazardous materials in the United States, impacts on state, local, and Native American tribal law enforcement and emergency response resources would be small.

For purposes of analysis in the EIS, DOE assumed infrastructure and practices, including maintenance and enforcement of safety standards, used in transporting spent nuclear fuel and high-level radioactive waste to Yucca Mountain by rail would be comparable to that in current service (49 CFR Part 213). In this regard, the analysis of transportation accidents included the potential for accidents involving trains passing near each other on adjacent rails, while traveling in opposing directions at high speeds. DOE believes it is reasonable to expect the safety of infrastructure and practices for shipments to Yucca Mountain for the Proposed Action would be at least equivalent to that today.

National impacts estimated in the EIS use data that incorporate statistics compiled from accidents in localities across the United States. The statistics include those for accidents where transportation infrastructure was a contributing factor. Thus, potential impacts in any locality, even one having transportation infrastructure with unusual hazards, would be much less than for the entire transportation system. As a consequence, with the exception of the heavy-haul truck scenario, DOE believes existing highway and rail infrastructure, as well as its maintenance and public safety services, would be adequate for the safe transportation of spent nuclear fuel and high-level radioactive waste to Yucca Mountain. DOE also believes the potential impacts to infrastructure and public safety services from transportation would be minimal. Because the estimates are based on present-day transportation conditions, DOE believes it would not be necessary to upgrade infrastructure to support shipments to Yucca Mountain.
As discussed in Section 6.3.3 of the EIS, heavy-haul truck transport in Nevada could affect transportation on designated roads in the State. As discussed in that section, Nevada highways along a route, including roads, bridges and culverts, would be upgraded for heavy-haul truck use, if DOE selected heavy-haul truck transport. Upgrades would include reconstruction of some highway sections, especially in areas where spring and fall thaws and freezes make highways susceptible to damage by heavy vehicles. In addition, new turnout lanes at frequent intervals along two-lane highways would be constructed to allow other traffic to pass the slower heavy-haul vehicles. The location and frequency of turnouts would be determined in consultation with State and Native American tribal jurisdictions after a specific route were selected. Highway shoulders would be widened and road surfaces would be improved in many areas. The potential impacts of these construction activities are analyzed in the EIS. Section 6.3.3.1 discusses impacts heavy-haul trucks would have on the flow of traffic on roads in Nevada. This section observes that heavy-haul trucks would interfere with the free flow of traffic, leading to queues behind trucks in some areas. It also discusses the level of service for Nevada highways, noting that for many of Nevada's rural highways the level of

service is A, which represents free-flowing traffic with few vehicles. In addition, in analyzing candidate routes for heavy-haul trucks, DOE projected traffic volumes for the routes (DIRS 154675-Ahmer 1998). DOE assumed that heavy-haul trucks would operate under permits issued by the State of Nevada and also assumed, for purposes of analysis in the EIS, that these permits would specify conditions of travel.

Cost estimates developed for highway upgrades associated with the heavy-haul truck transport implementing alternatives include cost for design and construction of road upgrades for public roads and for annual maintenance of the roads that would be used (DIRS 154765-Ahmer 1998). The estimated costs discussed in EIS Section 6.3.3 for each candidate route are based on detailed estimates, which include lane widening, truck lane and turnout construction, pavement upgrades, intersection upgrades, pavement type, and shoulder upgrades.

DOE would be responsible for making the funding available for the upgrades if it selected heavy-haul truck transport, and for working with the State of Nevada and Native American tribes to ensure funding was available for the road upgrades necessary to provide infrastructure for transporting spent nuclear fuel and high-level radioactive waste using heavy-haul trucks on Nevada roads. For purposes of analysis in the EIS, DOE assumed funding to upgrade routes in Nevada for heavy-haul truck transport would originate from a source or sources outside the State.

Section 180(c) of the NWPA requires DOE to provide technical assistance and funds to states for training of public safety officials of appropriate units of local government and tribes through whose jurisdictions it would transport spent nuclear fuel and high-level radioactive waste. The training would cover procedures required for safe routine transportation of these materials, as well as procedures for dealing with emergency response situations. DOE would provide the assistance based on the training needs of the states and tribes, as they determined using a planning grant and based on availability of funds in annual Program budgets specified by Congress. Additional Federal response capabilities, such as expert services from the Radiological Assistance Program Team, could be activated, as requested by states and tribes. See Section M.6 of the EIS for a discussion of the DOE Section 180(c) Policy and Procedures.

DOE believes that the EIS adequately analyzes transportation-related impacts that could result from the Proposed Action. DOE also believes that the EIS provides the information necessary to make decisions on the basic approaches to transporting spent nuclear fuel and high-level radioactive waste (either rail or truck shipments), as well as the choice among alternative rail corridors in Nevada, if the site was recommended and approved. See the introduction to Chapter 8 of this Comment-Response Document for more information.

8.9 (425)
Comment - EIS000103 / 0002
There are no cost estimates for the casks that will be carried on the highways or on rail. When I met Dan Ryan years ago at a transport meeting, he said they would individually cost 350,000 to 500,000 apiece and they want 10 to 11,000.

That's 50 billion dollars, so that I suggest they get in these estimates somewhere and also the cost for vitrification and other processes that they're using. This again is not explaining to the public, these enormous costs.

It would be wonderful -- and I praise DOE for this concept, because if you did real transportation studies -- and I'm sure you will such as distance between towns, topographies, number of lanes, et cetera and costs, that you will provide the upgrades for our hundreds of miles of highways, and I would love to see what those figures would be.

Response
The number of shipping casks needed would only be a small percentage of the total number of shipments made (about 11,000 rail shipments). Section 2.1.3.4 of the EIS describes the shipping cask, manufacturing, maintenance, and disposal. This section states, "The number and type of shipping casks required would depend on the predominant mode of transportation." Because the shipping casks would not be used for storage at Yucca Mountain, they would be cycled back and forth between the commercial sites and Yucca Mountain. The number of shipping casks needed would be based on the shipping logistics developed, to ensure there were a sufficient number of casks to handle the average shipping rate. For example, if one cask could make 30 trips per year, and a total of 300 shipments were made in that year, then only 10 shipping casks would be needed.

Waste vitrification and similar activities are not part of the proposed activities and thus are not analyzed in the EIS. Total life-cycle costs of the alternatives for waste acceptance, storage, and transportation are contained in *Environmental Impact Statement Cost Summary Report* (DIRS 104980-CRWMS M&O 1999).

Nevada highways would be upgraded for heavy-haul truck use, if heavy-haul truck transport was the mode selected (see Section 6.3.3.1 of the EIS). Upgrades would include reconstruction of some highway sections, especially in areas where spring and fall thaws and freezes make highways susceptible to damage by heavy vehicles. In addition, new turnout lanes at frequent intervals along two-lane highways would be constructed to allow other traffic to pass the slower heavy-haul vehicles. Highway shoulders would be widened and road surfaces would be improved in many areas.

Cost estimates developed for highway upgrades associated with heavy-haul truck transport scenarios include costs for annual maintenance of the roads used.

8.9 (2352)
Comment - EIS000707 / 0003
In regards to rail transportation there are several Intermodal Transfer Stations to be built in Nevada. I assume that the DOE would be responsible for the cost, if not who would be?

Response
If DOE selected heavy-haul truck transport, one intermodal transfer station would be necessary (see Section 6.3.3.1 of the EIS). The intermodal transfer station would not be needed if a branch rail line was constructed to the repository. If an intermodal transfer station was constructed, DOE would fund the construction activities.

8.9 (3121)
Comment - EIS000726 / 0013
There is no mention of actions to prevent, or for compensation or mitigation for increased wear and tear to our highway infrastructure, or for repair caused by accidents or incidents. In a transport 6 years ago to the low-level disposal site, there was a circus of damaged bridges and culverts left across the County, indeed, across the country. At another time, there was an incident where radiation escaped from the transport vehicle. An entire section of highway had to be dug up, containerized and shipped to the waste facility as radioactive waste. Not only is there repair to the highway, but there is marked impact to surrounding ecosystems. In particular, if there had been a riparian or spring ecosystem involved, the impact could have been tragic for endangered and threatened species. Almost all transportation routes within Clark County are through the habitat of the endangered desert tortoise. This kind of accident will indeed happen again. Using your own DOE accident and incident data, Clark County estimates that 46 such incidents of surface contamination will occur within Clark County for the Proposed Action of this DEIS, and that 3 incidents of radioactive contamination beyond the vehicle will occur. These figures are only within Clark County! The response to all such accidents and incidents must be addressed within the DEIS.

Response
If DOE selected heavy-haul truck transport, Nevada highways would be upgraded for heavy-haul truck use (see Section 6.3.3.1 of the EIS). Upgrades would include reconstruction of some highway sections, especially in areas where spring and fall thaws and freezes make highways susceptible to damage by heavy vehicles. In addition, new turnout lanes at frequent intervals would be constructed along two-lane highways to enable other traffic to pass the slower heavy-haul vehicles. Highway shoulders would be widened and road surfaces would be improved in many areas.

Cost estimates developed for highway upgrades associated with heavy-haul truck transport include annual maintenance of the roads used. The Nevada Transportation Engineering File (DIRS 154675-Ahmer 1998) includes a cost estimate for heavy-haul truck transport, including the design, construction, and management of the initial upgrades for public roads for each of the five candidate routes. DOE based the projected costs in Section 6.3.3.2 of the EIS on those detailed estimates, which include lane widening, truck lane and turnout construction, and upgrades to pavement, intersections, and shoulders.

During the 24 years of the Proposed Action, the mostly legal-weight truck national transportation scenario would involve as many as 53,000 truck shipments of spent nuclear fuel and high-level radioactive waste (see Section

J.1.4.2.3.2 of the EIS). The transportation analysis estimated that those shipments could involve as many as 66 accidents (average of 1.7 accidents per year nationally). Less than 1 percent of these accidents could generate forces capable of causing functional damage to the casks, but would have no radiological consequences. Therefore, the estimated number of accidents that could damage a cask over the 24-year period on a national basis is less than 0.5. The number of accidents that could occur in Nevada is a subset of this estimate.

Legal-weight truck shipments in Nevada to a Yucca Mountain Repository would travel over highways that cross desert tortoise habitat, but none of the routes would cross habitat that the U.S. Fish and Wildlife Service has designated as critical for recovery of this threatened species (see Section 6.3.1 of the EIS). Over the 24 years of operations under the Proposed Action and approximately 50,000 legal-weight truck shipments, vehicles probably would kill individual desert tortoises. However, under this scenario legal-weight trucks would contribute only about 1 percent to the daily volume of vehicles to and from the repository site and only about 0.15 percent of commercial truck traffic on Interstate-15 and U.S. 95 in southern Nevada. Thus, any desert tortoises killed by trucks transporting spent nuclear fuel or high-level radioactive waste probably would be only a small fraction of all desert tortoises killed on highways.

Costs from accidents during transport involving a suspected radiological release or precautionary evacuation would be covered under the Price-Anderson Act. Accidents or incidents during transport that did not involve a radiological release would be covered under the carrier's insurance.

8.9 (4918)
Comment - EIS001510 / 0003
The DEIS is problematic because it uses conservative scenarios rather than severe ones in its analysis of the costs and associated risks of transportation. In order to comprehensively estimate the risks associated with the transport of highly radioactive material from 77 sites in the U.S. for a substantial period of time, the potentiality of the "worst case scenario" must be factored into both the cost estimate and the health impact analysis. Factors such as emergency costs, decontamination costs, hospital costs, and evacuation in the event of a severe accident must be considered.

Response
As discussed in Sections 6.2.4.2 and J.1.4.2.1 of the EIS, the accident analyses included the "maximum reasonably foreseeable accident." This accident is more severe than would be likely in postulated "real" accidents, including truck crashes into bridges, train derailments followed by fires, derailments followed by immersion in a river, and similar extreme conditions. DOE selected the performance standards for casks prescribed by the Nuclear Regulatory Commission (10 CFR Part 73) to ensure that such accidents would be unlikely to result in releases of radioactivity from the cask. These standards ensure that casks would be extremely robust. The maximum reasonably foreseeable accident postulated in the EIS assumes that accident conditions would exceed the design limits of the transportation cask structure and materials. These conditions would be unlikely to occur during the 24-year transportation campaign. In addition, forces and heat would be applied to the structures and surfaces of a cask in a way that would cause the greatest damage and bring about releases of radioactive materials from the cask to the environment.

As discussed in Chapter 6 and Appendix J of the EIS, the risk of a severe accident involving a release of radioactive materials is very small, about 1 to 2 in 10 million per year. DOE is aware of the potential consequences of such an accident and has plans for training emergency responders [see the discussion on NWPA Section 180(c) in Appendix M] and systems in place to support states during emergencies, if requested (see Section M.6). In response to comments, DOE has included a discussion on the range of potential costs of cleanup following a severe transportation accident in Appendix J.

Costs from accidents during transportation involving a suspected radiological release or a precautionary evacuation would be covered under the Price-Anderson Act. Costs from accidents or incidents during transportation that did not involve a radiological release would be covered under the carrier's insurance.

DOE believes that the EIS provides sufficient information on severe accidents, their potential consequences, preparations for and cleanup of potential releases, and range of costs to support current decisionmaking.

8.9 (5389)
Comment - EIS001887 / 0097
Other areas directly affecting the State in responding to the unprecedented spent fuel and HLW [high-level radioactive waste] shipping campaign required to implement the Proposed Action include costs and impacts associated with:

• real time vehicle tracking and the associated costs

• vehicle inspection (legal-weight trucks and heavy-haul trucks)

• equipment (initial purchase, maintenance, and replacement)

• ports of entry and vehicle inspection facilities at intermodal transfer stations

• training (initial first responder, advanced training, and ongoing training)

• accidents and incidents

• emergency response equipment and training

• private/government agency emergency response personnel

• safe havens

• designated and alternative routes

• en route repair facilities, towing of vehicles, and availability of parts to repair trucks

• security of shipping casks during en route repair of heavy-haul trucks

• possible acts of sabotage

• health exposure issues to personnel

None of these costs/impacts on the State of Nevada and local governments are addressed in the Draft EIS.

Response
In response to this and similar comments, DOE has provided additional information in Appendix M of the EIS on the proposed operational protocols for shipments, including planning and mobilization, en route operations, and postshipment activities. This information indicates that DOE and its Regional Servicing Contractors would perform most of the activities identified by the commenter. DOE would bear the costs for these activities. Appendix M provides additional information on emergency response planning, technical assistance and funds to states and Native American tribes as prescribed by Section 180(c) of the NWPA, physical protection of the shipments, and liability considerations from accidents.

Section 180(c) of the NWPA requires DOE to provide technical assistance and funds for emergency response training to states and tribes that would have shipments move through their jurisdictions on the way to a repository. A percentage of these funds may be used to obtain equipment. If additional resources are required to deal with an accident, assistance can be requested from Federal agencies. See Appendix M of the EIS for additional information on Section 180(c) and emergency response.

It is the intent of Section 180(c) of the NWPA that first responders be sufficiently trained to safely respond to an incident involving the shipment of spent nuclear fuel and high-level radioactive waste. DOE has committed to providing technical and financial assistance for training as mandated by Section 180(c) of the Act approximately 4 years before shipments commenced. The *Federal Register* notices make it clear that the necessary funding would go to states and tribes. Local governments would not be eligible to receive Section 180(c) grants directly. However,

states and tribes would be required to coordinate their planning with local jurisdictions, indicating in the application that the needs of local public safety officials were considered and how the training assistance would be provided to local jurisdictions and their appropriate public safety officials.

DOE recognizes that emergency preparedness capabilities and needs vary from jurisdiction to jurisdiction. To assist states and tribes to determine what their needs are and where the Section 180(c) funds and assistance can best be applied, DOE would provide a one-time planning grant to aid in making this determination.

In the event of an incident or accident involving radioactive materials, states, tribes, and local governments can request assistance from the Federal Government under the Federal Radiological Emergency Response Plan. Assistance is available from 17 different agencies. In addition, DOE maintains eight Regional Coordinating Offices across the country that are ready to provide assistance. Appendix M of the EIS provides information about these resources.

The transportation contractor would be required to provide drivers and crews with specific written procedures that clearly define detailed actions to be taken in the event of an emergency or incident. The Draft Request for Proposals, *Acquisition of Waste Acceptance and Transportation Services for the Office of Civilian Radioactive Waste Management* (DIRS 153487-DOE 1998), focuses in detail on these responsibilities, as well as on other related responsibilities. Appendix M of the EIS discusses carrier and shipper responsibilities regarding emergency situations.

8.9 (5561)
Comment - EIS001887 / 0192
Page 3-99; Section 3.2.1.3 - Barge and Heavy-Haul Truck Transportation

The Draft EIS does not address impacts to infrastructure at either end of the shipping stream (e.g., required improvements at reactor sites or highway upgrades in Nevada).

Response
Heavy-haul truck and barge transport from 19 commercial sites would be needed to move spent nuclear fuel to a railroad access for shipment to the repository. An intermodal transfer would be conducted in existing facilities (terminals and berths) that are remote from public access (see Section J.2 of the EIS).

Nevada highways would be upgraded for heavy-haul truck use, if heavy-haul truck transport was the mode selected (see Section 6.3.3.1 of the EIS). Upgrades would include reconstruction of some highway sections, especially in areas where spring and fall thaws and freezes make highways susceptible to damage by heavy vehicles. In addition, new turnout lanes at frequent intervals along two-lane highways would be constructed to allow other traffic to pass the slower heavy-haul vehicles. Highway shoulders would be widened and road surfaces would be improved in many areas.

Cost estimates developed for highway upgrades associated with heavy-haul truck transport scenarios include costs for annual maintenance of the roads used. *Cost Estimate for Heavy Haul Truck Transportation* (DIRS 154675-Ahmer 1998) includes a detailed cost estimate for the design, construction, and management of the initial road upgrades for public roads for each of the five heavy-haul truck transport routes. The estimated costs shown in Section 6.3.3 of the EIS are based on those detailed estimates, which include lane widening, truck lane and turnout construction, pavement upgrades, intersection upgrades, and shoulder upgrades.

8.9 (5733)
Comment - EIS001887 / 0341
Page 6-105; Section 6.3.3.2.1

Socioeconomics

Cost figures shown for upgrading the Caliente route are significant understatements. It is likely that the State of Nevada will require extensive lane additions and widening along most of the route in both directions between Caliente and Yucca Mountain. Without such additions, the presence of daily heavy-haul trucks coming and going

along the narrow, rural highways would create hazards and cause major disruption along impacted highways. Costs for upgrading the Caliente route alone are likely to be upwards of $800 million.

The Draft EIS also fails to assess costs and impacts of upgrading an alternative to the Caliente heavy-haul truck route that can be used when the primary route is unavailable (due to weather, construction, accidents, etc.). To be functional, a heavy-haul truck transportation system must have at least two functional routes. Both routes will require extensive upgrades and improvements. Costs and impacts for both must be assessed in the EIS.

Response
Nevada highways would be upgraded for heavy-haul truck use, if heavy-haul truck transport was the mode selected (Section 6.3.3.1 of the EIS). Upgrades would include reconstruction of some highway sections, especially in areas where spring and fall thaws and freezes make highways susceptible to damage by heavy vehicles. In addition new turnout lanes at frequent intervals along two-lane highways would be constructed to allow other traffic to pass the slower heavy-haul vehicles. Highway shoulders would be widened and road surfaces would be improved in many areas.

Cost estimates developed for highway upgrades associated with heavy-haul truck transport scenarios include costs for annual maintenance of the roads used. The *Nevada Transportation Engineering File* Table of Contents/ Summary (DIRS 154695-Ahmer 1998), includes a detailed cost estimate for the design, construction, and management of the initial road upgrades for public roads for each of the five heavy-haul truck transportation routes. The estimated costs shown in Section 6.3.3.2.1 of the EIS are based on those detailed estimates, which include lane widening, truck lane and turnout construction, pavement upgrades, intersection upgrades, and shoulder upgrades. As shown in Table 2.5 of the EIS, an $800 million cost is identified; this cost estimate is based on construction of a branch rail line, should rail be selected as the transportation mode.

The transportation logistics for shipment of casks is flexible enough to ensure that any temporary conditions that cause the preferred routes to be unavailable for heavy-haul truck transport traffic would not affect the overall shipment process. Shipment logistics would be rigorously integrated between generator sites, carriers, the State of Nevada and the repository, and contingency plans would be developed for temporary stoppage of shipments anywhere in the system. Therefore, additional fully upgraded routes would not be necessary.

8.9 (5784)
Comment - EIS001887 / 0379
Page J-89; Table J-37 – Potential Road Upgrades for Caliente Route

The Draft EIS does not properly evaluate a range of costs for required infrastructure upgrades along the Caliente HHT [heavy-haul truck] route. Aside from construction of a short bypass in Beatty, the Draft EIS assumes that the Caliente HHT route will require only moderate pavement upgrade turnouts every 20 miles. (p. J-89) Preliminary analysis by NDOT [Nevada Department of Transportation] indicates that the life cycle costs of such upgrades may be $450-500 million. Additional upgrades may be necessary for safety and traffic control, as well as to reduce routine radiological exposures and perceived risk impacts. The State of Nevada has identified 13 route segments, with a total length of 92 miles, where slow lanes would likely be required on both sides of the road, at a cost of at least $100 million in addition to pavement upgrades. DOE must reexamine its minimum infrastructure upgrade assumptions and costs. A bounding analysis should estimate the cost of constructing slow traffic lanes on both sides of the road for the entire 331 mile route. DOE should also investigate the costs and benefits of constructing bypasses to avoid the U.S. 6 intersection with U.S. 95 in Tonopah and the extreme right turn on U.S. 95 in Goldfield.

Response
The Nevada Transportation Engineering File, *Cost Estimate for the Heavy Haul Truck Transport Design* (DIRS 154675-Ahmer 1998), includes a detailed cost estimate for the design, construction, and management of the initial road upgrades for public roads for each of the five heavy-haul truck transport routes. The estimated costs shown in Section 6.3.3.2.1 of the EIS are based on those detailed estimates, which include lane widening, truck lane and turnout construction, pavement upgrades, intersection upgrades, and shoulder upgrades. Cost estimates developed for highway upgrades associated with heavy-haul truck scenarios include costs for annual maintenance of the roads used.

Table J-91 in the EIS summarizes the proposed Caliente Route road upgrades. The details for the costs associated with those upgrades are identified in the *Cost Estimate for the Heavy Haul Truck Transport Design* (DIRS 154675-Ahmer 1998), which shows that the estimated total lifecycle costs for road upgrades, maintenance, and repair over the 24-year Proposed Action would be $239 million in 1998 for the Caliente heavy-haul truck route. As shown in the cost estimate:

- Truck turnouts are proposed on each side of the road at 32-kilometer (20-mile) intervals for the route segment from Caliente to Tonopah, and at 8-kilometer (5-mile) intervals for the route segment between Tonopah and Yucca Mountain. This results in 66 truck turnouts being constructed, at a length of 300 meters (1,000 feet) per turnout, for a total of 20 kilometers (12.5 miles) of four-lane sections along the route.

- More than 50 kilometers (31 miles) of truck passing lanes are proposed in addition to the turnouts.

- More than 290 kilometers (180 miles) of roadway would be widened to provide a minimum of 4.3-meter (14-foot)-wide lanes and 0.6-meter (2-foot)-wide paved shoulders.

- More than 270 kilometers (170 miles) of road would be completely reconstructed to eliminate frost restrictions for heavy-haul vehicles.

- Sixteen major box culverts and more than 280 standard culverts would be upgraded.

- Four major intersections (including the intersection at Tonopah and the curve at Goldfield) would be reconstructed to allow the heavy-haul transporters to maneuver safely and with minimal impact to other traffic.

- An alternate route through Beatty would be constructed to minimize impacts to traffic at the downtown corner of U.S. 95.

8.9 (5990)
Comment - EIS001879 / 0015
The Draft EIS does not fully or adequately address the costs and consequences of potential transportation incidents and accidents in the site county. Even without radiation release, these costs include: 1) emergency response and evacuation (by responders who have been trained and equipped to safely and effectively perform such functions); 2) site cleanup; 3) potential effects on the business and/or value of adjacent property. A revised EIS should identify and estimate the potential costs and consequences of transportation incidents and accidents in Nye County.

Response
The NWPA requires DOE to provide technical and financial assistance to states and Native American tribes for training public safety officials of appropriate units of local government through whose jurisdictions it would transport spent nuclear fuel or high-level radioactive waste [see Sections 116(c) and 180(c) of the Act]. Training would cover procedures for safe routine transportation of these materials and for dealing with emergency response situations. The Nuclear Waste Fund would be the source of funds for work performed under these provisions of the Act.

The EIS describes DOE policies for providing funding and technical assistance to eligible states and tribes for transportation training and emergency response planning (see Appendix M of the EIS for more details).

In the Final EIS, DOE has expanded the socioeconomic discussions in Chapter 3 to clarify the basis for understanding the magnitude of potential impacts described in Chapter 4. These discussions include a projection of baseline parameters through 2035 based on the most recently available information and assumptions. The EIS now provides a quantified estimate, to the extent possible, of school enrollment and changes in law enforcement and public service personnel requirements. The socioeconomic impact sections analyze impacts on businesses and community infrastructure for each alternative (see Section 6.3.3 of the EIS).

In light of the comments received on the Draft EIS concerning perceived risk, DOE examined relevant studies and literature on perceived risk and stigmatization of communities to determine whether the state-of-the-science in

predicting future behavior based on perceptions had advanced sufficiently since scoping to allow DOE to quantify the impact of public risk perception on economic development or property values in potentially affected communities (see Section 2.5.4 and Appendix N of the EIS). Of particular interest were those scientific and social studies carried out in the past few years that directly relate to either Yucca Mountain or to DOE actions such as the transportation of foreign research reactor spent nuclear fuel. DOE reevaluated the conclusions of previous literature reviews such as those conducted by the Nuclear Waste Technical Review Board and the State of Nevada, among others. DOE has concluded that:

- While in some instances risk perceptions could result in adverse impacts on portions of a local economy, there are no reliable methods whereby such impacts could be predicted with any degree of certainty
- Much of the uncertainty is irreducible, and
- Based on a qualitative analysis, adverse impacts from perceptions of risk would be unlikely or relatively small.

While stigmatization of southern Nevada can be envisioned under some scenarios, it is not inevitable or numerically predictable. Any such stigmatization would likely be an aftereffect of unpredictable future events, such as accidents, which would not be expected to occur. As a consequence, DOE addressed but did not attempt to quantify any potential for impacts from risk perceptions or stigma in this Final EIS.

As discussed in Chapter 6 and Appendix J of the EIS, the risk of a severe accident involving the release of radioactive materials is very small, about 1 to 2 in 10 million per year. DOE is aware of the potential consequences of such an accident and has plans for training emergency responders [see the discussion on NWPA Section 180(c) in Appendix M] and has systems in place to support states during emergencies, if requested (see Appendix M). In response to public comments, DOE has included a discussion on the range of potential costs of cleanup, following a severe transportation accident, in Appendix J.

If actions compromised the integrity of the repository, mitigation activities would be funded under either the Nuclear Waste Fund or the Price-Anderson Act. The Price-Anderson Act provides liability coverage for commercial activities operating under a license from the Nuclear Regulatory Commission and for DOE activities. It establishes a system of private insurance and Federal indemnification that generally ensures that as much as $9.43 billion is available to compensate for damages suffered by the public from a nuclear incident, regardless of who causes the damage. Payment would be from Federal funds or, if public liability arose from activities funded by the Nuclear Waste Fund (for example, activities at a geologic repository), from that Fund. The liability of all responsible parties is limited to the amount of coverage provided by the Price-Anderson system. State and local governments cannot be required to provide additional compensation. DOE has revised the EIS to include more details about indemnification under the Price-Anderson Act (see Appendix M).

Costs from accidents during transportation involving a radiological release or a precautionary evacuation would be covered under the Price-Anderson Act. Costs from accidents or incidents that did not involve a radiological release would be covered under the carrier's insurance. In addition to Price-Anderson indemnification, the Motor Carrier Act of 1980 and its implementing regulations (49 CFR Part 387) require motor vehicles carrying spent nuclear fuel or high level radioactive waste to maintain financial responsibility of at least $5 million, which would be available to cover public liability from a non-nuclear incident and for environmental restoration. Federal law does not require rail, barge, or air carriers of radioactive materials to maintain liability coverage, although these carriers often voluntarily carry such insurance. Regardless of whether they had insurance, a radioactive materials incident involving these carriers would be subject to state law applicable for any other type of accident. See Appendix M of the EIS for more information.

As for mitigating accidents, the DOE Regional Servicing Contractors would be required to provide detailed written procedures for how they would respond to an incident and arrange for repair or replacement of equipment or recovery as appropriate. In accordance with ANSI N14-27 (DIRS 156289-ANSI 1987), the carrier is expected to provide appropriate resources for dealing with the consequences of an accident, isolating and cleaning up contamination, and maintaining working contact with the responsible governmental authority until the latter has declared the incident to be satisfactorily resolved and closed (see Appendix M of the EIS for more details).

8.9 (6885)
Comment - EIS001611 / 0001
Illinois may well be, I think, the only state in the country that has a cabinet level Department of Nuclear Safety. And in this instance I want to give them praise, because 15 years ago when they were formed, one of their members named John Cooper, who was formerly with NRC [Nuclear Regulatory Commission], was the one who insisted that all high level RAD [radioactive] shipments be escorted into, through and out of Illinois.

Now, those were in the days when shipments were one maybe every six to eight weeks for maybe a two- or three-month period. Now we are talking something quantitatively much greater. I just confirmed, five casks per day is orders of magnitude, almost, difference.

The concern, and this gets back to the EIS, though, is what is the cost and who bears the cost for these escort services that the Department of Nuclear Safety believes is essential to protect the public health and safety in Illinois? Well, if you take the numbers of projected shipments and over the 24-year period of the project, you have to take into account every one of those shipments will involve a minimum of seven state, federal and local agencies, including the governor's office.

I have repeatedly asked DNS if they could give me a ball park figure of what it would cost per shipment if you added all the costs. They haven't been able to come up with that yet. I hope someone will get that on the record at some point. But if you assume a $10,000 cost, which I believe is probably very low, given that seven major agencies are involved per shipment, you come out with a staggering figure of $312 million over the 24-year period of this project just for Illinois.

And if you decide that you want to give equal protection to the other 43 affected states, this gives you a maximum boundary of 13 and a half billion dollars just to escort these shipments around the country. I think this is something that the legislators, who will be taking up the Yucca Mountain Mobile Chernobyl bill tomorrow, really need to take a look at. But I do want to go on the record lauding the Department of Nuclear Safety for their escort efforts.

Response
DOE contractors would be responsible for acquiring, training, overseeing, and paying security and escort personnel. This means that DOE would ultimately bear the costs of escorts. The Department has identified this expense for those states currently requiring a permit (escort costs) for truck and rail shipments.

8.9 (8774)
Comment - EIS001816 / 0021
Cost Effectiveness: Truck transport can be more expensive than rail due to the greater number of shipments. The extent of combining rail and truck (intermodal) will affect the total cost of the program. The DEIS must define how a cost reduction to the YM [Yucca Mountain] program can be achieved with rail transport, and the projected cost to construct and operate an intermodal facility in Nevada.

Response
Section 2.1.5 of the EIS provides the estimated costs associated with the proposed action, including transportation costs in Nevada, estimated to be about $800 million. Two documents cited in the section describe transportation costs in detail:

- *Cost Estimate for the Heavy Haul Truck Transport Design* (DIRS 153442-Ahmer 1998)
- *Nevada Transportation Study Construction Cost Estimate* (for rail) (DIRS 118012-CRMWS M&O 1998)

The three mode options for transportation, mostly legal-weight truck, mostly rail to heavy-haul truck in Nevada, and mostly rail, have all been evaluated for estimated total cost. The cost comparison of mostly heavy-haul truck using an intermodal transfer in Nevada to that of a mostly rail scenario shows that the construction of an initial branch rail line to the proposed repository makes the mostly rail scenario more expensive in initial costs. However, the mostly heavy-haul truck scenario would be considerably more expensive than rail in the operations and maintenance areas. The result is that rail and heavy-haul truck transport system costs would be in the same rough order of magnitude, for similar transport lengths, over the life of the repository operation.

Construction and operations and maintenance costs for the intermodal transfer station associated with heavy-haul truck transport are included in the summaries shown in Item 1 above. The detailed cost estimate for construction and operation and maintenance of the intermodal transfer station is included in *Intermodal Transfer Station Preliminary Design* (DIRS 104849-CRWMS M&O 1997).

8.9 (8992)
Comment - EIS001040 / 0025
How will federal responsibility and funding be utilized by:

1. Carriers; on and off site during normal operations and accidents
2. State, tribal and local governments on and off site (for example 12 miles from an accident).

Response
Carriers of spent nuclear fuel and high-level radioactive waste would perform the transportation work under a contract with DOE. The carriers would have the responsibility for performing all transportation work in compliance with Federal, state, and local regulations, as applicable. As contractors to DOE, the carriers would be funded by DOE, and would be accountable to DOE for meeting all regulatory requirements (see Appendixes J and M of the EIS for more details).

Section 180(c) of the NWPA requires DOE to provide technical assistance and funds to states for training for public safety officials of appropriate units of local government and tribes through whose jurisdictions it would transport spent nuclear fuel or high-level radioactive waste. Training would cover procedures required for safe routine transportation of these materials, as well as procedures for dealing with emergency response situations. The Nuclear Waste Fund would be the source of funds for work carried out under this subsection.

Office of Civilian Radioactive Waste Management; Safe Routine Transportation and Emergency Response Training; Technical Assistance and Funding, Notice of Revised Proposed Policy and Procedures (DIRS 104741-DOE 1998) describes the DOE policies for providing funding and technical assistance to eligible states and tribes for transportation training and emergency response planning.

8.9 (9489)
Comment - EIS001888 / 0152
[Summary of comments noted by Clark County Nuclear Waste Division staff at various citizens' meetings.]

Who will pay for the maintenance and/or upgrades to roads, bridges, etc. that will be impacted by the transportation?

Response
DOE assumed (DIRS 154675-Ahmer 1998) that road upgrades and maintenance would be funded by the Nuclear Waste Fund under the NWPA. If future road upgrades were required to install additional turnouts, because of increased traffic in areas where the heavy-haul trucks would be operating, DOE would work with the State of Nevada to ensure funding for that construction.

8.9 (9602)
Comment - EIS001888 / 0277
The Full Costs of Heavy Haul Transportation

The DEIS presents misleading cost data for heavy haul transportation. The engineering analysis presented to support the cost data ignores the costs of obtaining right-of-way to build an additional travel lane on each side of the northern and western beltways. This is a particularly serious problem due to the nature of the land uses adjacent to the beltways. It is likely that acquiring right of way for additional travel lanes through expensive residential, industrial and high-density commercial land uses will be extraordinarily high. The DOE has presented a fundamentally misleading estimate of the costs of the proposed heavy haul program by failing to include the right of way costs necessary to implement the program.

The last time similar heavy haul transporters traversed the State of Nevada was in 1993 when two autoclaves were moved to a mining site. The transporters themselves moved more slowly than anticipated and caused severe damage

to many bridges and culverts en route. The DEIS should consider these effects and account for the likely costs of improving Clark County's infrastructure.

Response
The assumption stated in Section 2.1.3.3 of the EIS is that the planned Las Vegas Beltway (northern, western, and southern sections) would be completed before DOE could begin transporting high-level nuclear waste by 2010. To date, Clark County has acquired all the necessary land for this Beltway. DOE's intent was to utilize the full Beltway that lies within the present acquired land. Cost estimates used by the Department for completion of the Beltway were obtained from Clark County (DIRS 103710-Clark County, 1997 estimates) and amounted to approximately $130 million not including major interchanges. A recent report prepared for the City of North Las Vegas (DIRS 155112-Berger Group 2000) estimates the cost of completing the northern section of the Las Vegas Beltway to be $525 million including two major interchanges. Using the same assumptions used in the City of North Las Vegas estimate, completion of the entire Beltway would cost about $1,250 million.

Heavy-haul truck cost estimates include the cost of upgrading existing roads. These cost estimates are contained in Section 6.3.3.1 of the EIS for each of the five implementing alternatives and are: Caliente, $120 million; Caliente/Chalk Mountain, $63 million; Caliente/Las Vegas, $93 million; Sloan/Jean, $20 million; and Apex/Dry Lake, $20 million.

The autoclave loads are not directly comparable to the cask loads in that the autoclave weights are significantly higher than cask weights (2 to 3 times heavier).

8.9 (11877)
Comment - EIS001887 / 0393
The maximum cost estimate of $800 million for Nevada rail transportation, based on an estimate for the Caliente route, is completely unrealistic unless DOE plans to sacrifice safety by constructing a rail line that barely meets the minimum Federal Railroad Administration requirements. Nevada is particularly concerned that DOE contractor studies have recommended operating the line without a state of the art computerized train control system. DOE's cost saving measures include shipping loaded rail casks in general freight trains, which will require switching cars at the connection point. DOE's proposal to routinely park loaded rail cask cars on a side track for up to 48 hours is unprecedented and will result in a separate legal challenge.

Response
Section 2.1.5 of the EIS summarizes the estimated costs of the Proposed Action based on estimates developed in the referenced EIS cost summary report. The estimated cost of Nevada transportation would be $800 million. The five rail corridors have been developed to a conceptual design level of detail. The basis for this cost estimate is derived from rail alignment analysis which contains design inputs, such as the American Railway Engineering Association, and U.S. Department of Transportation regulations using the Federal Railway Administration Track Safety Standards. It is DOE's intent to meet or exceed applicable regulatory requirements concerning rail design, construction, and operations.

The conceptual design level of detail cost estimates have been reviewed by an independent architectural engineering company as part of the Total System Life-Cycle Cost process. The review team concluded that they had a high level of confidence in the estimates based on the thoroughness of the estimating work and the methodical approach used.

DOE has gone on record, in its Draft Request for Proposals, *Acquisition of Waste Acceptance and Transportation Services for the Office of Civilian Radioactive Waste Management* (DIRS 153487-DOE 1998), that the Regional Servicing Contractor would make maximum use of special train services wherever reasonably possible.

The U.S. Department of Transportation regulation (49 CFR 174.14) addresses rail shipments in yards, transfer stations, or interchange points, and permits a maximum time limit of 48 hours, except where weekly or biweekly service is available. This period of time does not include Saturdays, Sundays, and holidays. Should general freight be chosen as the method of shipment by rail, this regulation would come into play more so than if dedicated trains were used.

The position of DOE in its Draft Request for Proposals for transportation proposes the use of special trains and advanced rail technology for shipping spent nuclear fuel and high-level radioactive waste, as long as the operator can demonstrate this option is cost-effective and lessens the potential for adverse railroad incidents.

8.10 Transportation Accidents

8.10 (54)
Comment - 7 comments summarized
Several commenters expressed concern about the validity of the accident data and statistics used in the EIS analyses and questioned why state-specific data were not used. Another commenter suggested that local transportation agencies should have been contacted rather than just the State Departments of Transportation. One commenter asked about the number of accidents per year. A commenter from Georgia demonstrated that the Draft EIS provided very little state-specific data, which the commenter stated should have been included. Another commenter suggested that accident rates for hazardous material shipments should be used rather than overall accident rates and that costs of accidents should be provided.

Response
In estimating transportation impacts, the EIS used state-specific highway and railroad accident rates for 1994 through 1996. These data were obtained from the U.S. Department of Transportation Motor Carrier Safety Information System and the Federal Railroad Administration, respectively. To supplement these data, DOE requested that the 48 contiguous states provide truck and rail transportation accident data for use in the EIS. Five states responded with highway data – Nevada, California, Illinois, Nebraska, and South Carolina. No state submitted railroad data. DOE compared the data provided by the five states to the data from the Motor Carrier Safety Information System and found that the differences were small. A detailed discussion of this evaluation is provided in Section J.1.4.2.3 of the EIS. DOE did not use local data because the Motor Carrier Safety Information System and the Federal Railroad Administration data are aggregations of local data and, therefore, include these data.

DOE did not use data for hazardous materials incidents to estimate transportation impacts because many times the criteria used for reporting incidents are not relevant to incidents that could damage a spent nuclear fuel cask. For example, gasoline tanker truck spills, which are reported as incident, are not accidents that are comparable to those that might damage a spent nuclear fuel cask. In any case, the Motor Carrier Safety Information System would include these types of incidents in the accident rate if they resulted in a fatality or injury, or if the damage to the gasoline tanker truck was severe enough to result in the gasoline tanker truck being towed away.

Special requirements imposed on the transportation of spent nuclear fuel and high-level radioactive waste, as discussed in Section M.2 of the EIS, would be expected to reduce the accident rates for shipments to Yucca Mountain to below those assumed in the EIS and those experienced by routine hazardous waste shipment.
In response to public comments, DOE has added maps of the routes analyzed in the EIS, the state-by-state number of shipments and impacts, and a discussion on the range of potential costs of cleanup following a severe transportation accident to the EIS (see Section J.4).

8.10 (68)
Comment - 14 comments summarized
Commenters stated that the EIS does not provide a description of the maximum reasonably foreseeable accident. A commenter stated that a description of other accidents and incidents that are less than the maximum reasonably foreseeable accident should be provided to determine the impact of these on emergency response systems. A commenter requested DOE to analyze specific accident scenarios in Nevada. Another commenter indicated that the EIS generalizes that the likelihood of an accident in Nevada would be less than that for the rest of the Nation. Nevada commenters stated that the EIS must consider a spent nuclear fuel and high-level radioactive waste truck colliding head-on with another truck loaded with commercial or military explosives, with a truck or rail cask involved in a massive infrastructure failure (for example, bridge collapse) and a natural disaster (for example, a flood), and a rail or truck cask involved in an accident with a military aircraft. Another commenter stated that DOE has, in its accident analysis, given credence to the virtually impossible scenario and also stated that the chances that